Enroll Now In EPA's

National Waste Minimization Partnership Program

WHAT CAN YOU SAVE TODAY?
S M T W T F S
RESOURCE CONSERVATION CHALLENGE

UNITED STATES • ENVIRONMENTAL PROTECTION AGENCY •

What Is the National Waste Minimization Partnership Program?

The National Waste Minimization Partnership Program is a new voluntary program that fosters partnerships between EPA and industry to reduce hazardous waste, especially waste containing highly toxic chemicals. The partnership is a cornerstone of the Resource Conservation Challenge. Initiated in December 2002, the challenge encourages new, innovative thinking in the conservation of our resources, including better ways to reduce, reuse, or recycle waste.

EPA created the National Waste Minimization Partnership Program (one of EPA's family of voluntary partnership programs) to focus efforts on reducing 30 highly-toxic, priority chemicals found in our nation's hazardous waste. Available scientific data indicate that these chemicals can cause serious harm to humans, wildlife and ecosystems if released to the environment. The National Waste Minimization Partnership Program focuses on finding solutions that prevent the formation of wastes containing these chemicals at the source of production, and by recovering/recycling these chemicals where they can not easily be eliminated or reduced at the source.

EPA's goal is to work with industry and the public to reduce the presence of these priority chemicals in hazardous waste by 50 percent by the year 2005, compared to amounts generated in 1991. EPA invites organizations that generate hazardous waste—particularly waste containing any of the 30 waste minimization priority chemicals—to join the National Waste Minimization Partnership Program. Make your contribution to the nation's strategic environmental goals.

What Are the Benefits If I Join?

- Public recognition for achieving voluntary reductions in priority chemicals.
- Your success stories posted on EPA's national program Web site.
- Use of EPA's National Waste Minimization Partnership Program logo to identify your organization as a program member.[1]
- The opportunity to display your National Waste Minimization Partnership Program membership plaques and accomplishment awards to customers, suppliers, employees, and stockholders.
- Access to Web-based information such as information on other EPA voluntary programs and the opportunity to see what other partners are doing.
- Links to technical and training assistance offices located in state and local government agencies, non-governmental organizations, and university technical services throughout the country.

How Do I Get Started?

Step 1: Identify one or more chemicals you would like to reduce at the source and/or recycle.

Choose one or more hazardous wastes generated by your facility that contain one or more waste minimization priority chemicals (WMPCs)[2]. You may propose projects that reduce wastes that do not contain WMPCs but that will, nevertheless, result in a significant environmental improvement. EPA encourages organizations to undertake waste minimization projects that benefit the environment; however, the purpose of the National Waste Minimization Partnership Program is to reduce the generation of WMPCs in wastes because WMPCs can cause the most serious problems if released to the environment. Thus, EPA prefers that you develop goals that contribute to EPA's National Waste Minimization Goal for reducing the generation of wastes that contain WMPCs.

Step 2: Develop a source reduction and/or recycling goal and project time line for each of the chemicals you are targeting.

For each waste you identify, establish a waste minimization goal and timeline for achieving that goal. You may achieve your goal through source reduction, recycling, or both. For example, you might choose to explore less toxic substitutes for lead in your production process to reduce the amount of lead generated in hazardous waste from a 2002 baseline of 500 pounds per year to a 2004 goal of 50 pounds per year. The total reduction might be expressed as a percent reduction per year, pounds of lead reduced during the project period, and/or a reduction in pounds of lead generated per unit of product produced. In addition to source reduction, or as an alternative, your goal might be to increase recycling of lead waste by 25 percent over the same time period.

United States Environmental Protection Agency
Office of Solid Waste
(5302W)
Washington, DC 20460

EPA530-K-03-004
August 2003
www.epa.gov/wastemin

[1] *Please note that EPA cannot endorse the purchase of a particular company's products or services.*

[2] *Listed with the enrollment form instructions.*

Step 3: Sign up!.

Enroll online at <www.epa.gov/wastemin> or complete and submit the attached enrollment form. You can also download a PDF copy of the enrollment form from the Web site. The enrollment form asks for a primary contact in your organization and a summary of the goals you have selected for each hazardous waste and chemical targeted. If you need to adjust your goals during the project, just let us know.

What Happens After I Submit My Enrollment Form?

EPA reviews applicants' voluntary goals to ensure that they result in a meaningful improvement in environmental performance and that they are described in clear and positive ways. Once EPA accepts your enrollment application, we will provide you with a membership plaque, post your organization's name and voluntary goals on the Web site, and, upon request, alert your local media of your enrollment and voluntary goals.

How Can I Receive EPA Recognition for My Accomplishments?

If you have achieved one of the goals identified in your enrollment agreement, you are eligible for an Achievement Award. To receive this award, describe your achievement using the Success Story outline provided in this packet. Your completed Success Story serves as your application for an Achievement Award. If you are not ready to apply for an Achievement Award at this time, but you have made important progress toward your goal(s) and you would like to share information about your progress, you may submit a Success Story to post on the Waste Minimization Web site. You may submit your Success Story electronically via the Web site at <www.epa.gov/wastemin>, or

via mail:
Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency (5302W)
Washington, DC 20460

via delivery service:
Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
Waste Minimization Branch, 6th Floor
2800 Crystal Drive
Arlington, VA 22202

Questions?

Call one of EPA's voluntary partnership program contacts to discuss your ideas, ask questions about getting started, and obtain leads for locating technical assistance resources.

EPA Region 1: CT, MA, ME, NH, RI, VT
Linda Darveau 617 918-1718
darveau.linda@epa.gov

EPA Region 2: NJ, NY, PR, VI
Joseph Malki 212 637-4101
malki.joseph@epa.gov

EPA Region 3: DE, DC, MD, PA, VA, WV
Tad Radzinski 215 814-2394
radzinski.tad@epa.gov

EPA Region 4: AL, FL, GA, KY, MS, NC, SC, TN
Beth Antley 404 562-8454
antley.beth@epa.gov

EPA Region 5: IL, IN, MI, MN, OH, WI
Janet Haff 312 353-7923
haff.janet@epa.gov

EPA Region 6: AR, LA, NM, OK, TX
Melissa Galyon 214 665-8423
galyon.melissa@epa.gov

EPA Region 7: IA, KS, MO, NE
Gary Bertram 913 551-7533
bertram.gary@epa.gov

EPA Region 8: CO, MT, ND, SD, UT, WY
Benjamin Bents 303 312-6435
bents.benjamin@epa.gov

EPA Region 9: AZ, CA, HI, NV
Heidi Hall 415 972-3386
hall.heidi@epa.gov

EPA Region 10: AK, ID, OR, WA
Domenic Calabro 206 553-6640
calabro.domenic@epa.gov

EPA Headquarters
Newman Smith 703 308-8757
smith.newman@epa.gov

ENROLLMENT FORM INSTRUCTIONS

Ready to enroll? Options for enrolling.

- Fill out an online enrollment form at: <www.epa.gov/wastemin>. Click on "Voluntary Partnerships" to link to the form.
- Download an enrollment form from the Web site and submit to us via mail or delivery service.
- Fill out the enrollment form enclosed in this package and submit to us via mail or delivery service.

General Information

This section of the enrollment form asks for basic information about the enrolling organization. We ask for the name of the organization joining, as well as the name of the individual facility or facilities joining. Identify a principal contact and the person authorizing participation in the program. Be sure to include your facility's RCRA ID number to help us identify you.

Goals Development

In this section, identify the chemical(s) you have selected for reduction by name and by CASR number anddescribe how you plan to reduce and/or recycle this chemical.* If conducting source reduction activities, complete the first two questions by estimating how much waste you currently generate containing this chemical and how much you believe you can reduce through source reduction activities. Next, identify the type of source reduction activity you plan to implement.

If you are conducting recycling activities, complete the next two questions by first estimating the baseline amount of the waste containing the chemical and then estimating the anticipated reductions through recycling activities. Next, identify the type of recycling activity you anticipate conducting.

You may, but are not required to, develop additional goals for additional chemicals. Please use supplemental sheets to set goals for additional chemicals.

* If conducting recycling activities only, skip to Question 3.

Submission

Please submit your form electronically at or mail completed forms to EPA at:

via mail:
Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency (5302W)
Washington, DC 20460

via delivery service:
Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
Waste Minimization Branch, 6th Floor
2800 Crystal Drive
Arlington, VA 22202

Waste Minimization Priority Chemicals

Organic Chemicals and Chemical Compounds

CASRN	Name
120-82-1	1,2,4-Trichlorobenzene
95-94-3	1,2,4,5-Tetrachlorobenzene
95-95-4	2,4,5-Trichlorophenol
101-55-3	4-Bromophenyl phenyl ether
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
120-12-7	Anthracene
191-24-2	Benzo(g,h,i)perylene
132-64-9	Dibenzofuran
	Dioxins/Furans
33213-65-9	Endosulfan, beta
959-98-8	Endosulfan, alpha
86-73-7	Fluorene
76-44-8	Heptachlor
1024-57-3	Heptachlor epoxide
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
58-89-9	Lindane (Hexachlorocyclohexane, gamma-)
67-72-1	Hexachloroethane
72-43-5	Methoxychlor
91-20-3	Naphthalene
	PAH Group (as defined in TRI)
40487-42-1	Pendimethalin
608-93-5	Pentachlorobenzene
82-68-8	Quintozene (Pentachloronitrobenzene)
87-86-5	Pentachlorophenol
85-01-8	Phenanthrene
129-00-0	Pyrene
1582-09-8	Trifluralin

Metal and Metal Compounds

7440-43-9	Cadmium
7439-92-1	Lead
7439-97-6	Mercury

ENROLLMENT FORM

OMB Control Number: 2050-0190
Expiration Date: 4/30/2006

General Information

Organization Name: _____ Facility Name: _____

Authorizing Official: _____ Title: _____

Principal Contact: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Fax: _____ E-mail: _____

EPA RCRA ID Number: _____

Goals Development

Our organization is choosing to become a partner in EPA's National Waste Minimization Partnership Program. Our goal is to reduce the quantity of one or more Waste Minimization Priority Chemicals currently found in our hazardous and/or nonhazardous wastes using source reduction and/or recycling practices, in lieu of waste treatment or land disposal practices. In this enrollment application, we identify one or more voluntary waste minimization goals that we believe we can achieve as partners in this program. The voluntary goals provided below are initial estimates, and may change over time. We may revise our goals or withdraw from the program at any time. If/when choose to revise our goals or withdraw from the program, we will notify EPA.

Chemical #1: _____ **CASRN:** _____

Narrative description of proposed project, and the mechanism you will use to measure success *(attach additional sheets if needed)*: _____

_____

1. Our voluntary **source reduction** goal for Chemical #1 is to reduce the amount of this chemical generated in hazardous waste from a baseline of _____ (X lbs generated/year) in _____ (month/year) to a reduced amount of _____ (X lbs generated/year), by _____ (month/year).

2. To accomplish this goal, we will explore the following **source reduction** options: (Check all that apply)

   __ Equipment or technology modifications
   __ Process or procedure modifications
   __ Reformulation or redesign of products
   __ Substitution of less toxic raw materials
   __ Improvements in inventory control
   __ Improvements in maintenance/housekeeping practices
   __ Other (explain): _____

AND/OR

3. Our voluntary **recycling** goal for Chemical #1 is to increase the amount of waste Chemical #1 recycled from a baseline amount of _____ (X lbs/year) to _____ (X lbs/year), in _____ (month/year), to an increased recycled quantity of _____ (X lbs/year) by _____ (month/year).

4. To accomplish this **recycling** goal, we will: (check all that apply)

   __Use/reuse in a process to make a product
   __Process the waste to recover or regenerate a usable product
   __Use/reuse as a substitute for a commercial product
   __Other (explain): _____

Note to participants: Use supplemental sheets to set goals for additional chemicals.

Please mail completed forms to us at:

Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
(5302W),
Washington, DC 20460

For Delivery Service:

Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
Waste Minimization Branch, 6th Floor
2800 Crystal Drive
Arlington, VA 22202

National Waste Minimization Partnership Program

Optional: Supplemental Chemical Reduction/Goal Development Sheet:

(Copy and complete for as many chemicals as you wish)

Company Name: _____

Facility Name: _____

Principal Contact: _____ Phone Number: _____

Chemical #:_____ **CASRN:** _____

Narrative description of proposed project, and the mechanism you will use to measure success: _____

_____

_____

_____

_____

_____

1. Our voluntary **source reduction** goal for Chemical # _____ is to reduce the amount of this chemical generated in hazardous waste from a baseline of _____ (X lbs generated/year) in _____ (month/year) to a reduced amount of _____ (X lbs generated/year), by _____ (month/year).

2. To accomplish this goal, we will explore the following **source reduction** options: (Check all that apply)

   __ Equipment or technology modifications
   __ Process or procedure modifications
   __ Reformulation or redesign of products
   __ Substitution of less toxic raw materials
   __ Improvements in inventory control
   __ Improvements in maintenance/housekeeping practices
   __ Other (explain): _____

AND/OR

3. Our voluntary **recycling** goal for Chemical # ____ is to increase the pounds of this chemical recycled from a baseline amount of _____ (X lbs/year) in _____ (month/year) to an increased recycled quantity of _____ (X lbs/year) by _____ (month/year).

4. To accomplish this **recycling** goal, we will: (check all that apply)

   __Use/reuse in a process to make a product
   __Use/reuse as a substitute for a commercial product
   __Process the waste to recover or regenerate a usable product
   __Other (explain):_____

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RESOURCE CONSERVATION CHALLENGE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SAMPLE

ENROLLMENT FORM

OMB Control Number: 2050-0190
Expiration Date: 4/30/2006

General Information

Organization Name: ABC Manufacturing Facility Name: Detroit, MI

Authorizing Official: Jim Buck Title: Vice President

Principal Contact: Bob Schroeder Title: Environmental Specialist

Address: 2525 Hollywood Lane

City: Detroit State: MI Zip: 33015

Phone Number: 555-333-6644 Fax: 555-333-6655 E-mail: bschroeder@abcmanufacturing.com

EPA RCRA ID Number: XYD 910 848 737

Goals Development

Our organization is choosing to become a partner in EPA's National Waste Minimization Partnership Program. Our goal is to reduce the quantity of one or more Waste Minimization Priority Chemicals currently found in our hazardous and/or nonhazardous wastes using source reduction and/or recycling practices, in lieu of waste treatment or land disposal practices. In this enrollment application, we identify one or more voluntary waste minimization goals that we believe we can achieve as partners in this program. The voluntary goals provided below are initial estimates, and may change over time. We may revise our goals or withdraw from the program at any time. If/when choose to revise our goals or withdraw from the program, we will notify EPA.

Chemical #1: Lead **CASRN:** 7439-92-1

Narrative description of proposed project and the mechanism you will use to measure success *(attach additional sheets if needed)*: Investigate opportunities to eliminate lead from our solder process. Previously, we replaced 50 percent lead solder with a low-lead solder which contained less than 1 percent lead.

1. Our voluntary **source reduction** goal for chemical #1 is to reduce the amount of this chemical generated in hazardous waste from a baseline of 2,000 lbs (X lbs generated/year) in May 2003 (month/year), to a reduced amount of 0 pounds (X lbs generated/year), by Dec 2003 (month/year).

2. To accomplish this goal, we will explore the following **source reduction** options: (Check all that apply)

- [x] Equipment or technology modifications
- [x] Process or procedure modifications
- [ ] Reformulation or redesign of products
- [ ] Substitution of less toxic raw materials
- [ ] Improvements in inventory control
- [ ] Improvements in maintenance/housekeeping practices
- [ ] Other (explain): _____

AND/OR

3. Our voluntary **recycling** goal for chemical #1 is to increase the amount of waste chemical #1 recycled from a baseline amount of _____ (X lbs/year) to _____ (X lbs/year), in _____ (month/year),to an increased recycled quantity of _____ (X lbs/year) by _____ (month/year).

4. To accomplish this **recycling** goal, we will: (check all that apply)

- [ ] Direct use/reuse in a process to make a product
- [ ] Process the waste to recover or regenerate a usable product
- [ ] Use/reuse as a substitute for a commercial product
- [ ] Other (explain): _____

Note to participants: Use supplemental sheets to set goals for additional chemicals.

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Waste Minimization Branch, 6th Floor
2800 Crystal Drive
Arlington, VA 22202

National Waste Minimization Partnership Program

Optional: Supplemental Chemical Reduction/Goal Development Sheet:

(Copy and complete for as many chemicals as you wish)

Organization Name: ABC Manufacturing

Facility Name: Detroit, MI

Principal Contact: Bob Schroeder Phone Number: 555-333-6644

Chemical # 2: Nickel-Cadmium Compounds **CASRN:** N/A

Narrative description of proposed project, and the mechanism you will use to measure success: Send used Ni-Cad batteries from cordless power tools to recycling facilities rather than dispose of them as hazardous waste. Find a vendor to recycle these batteries.

1. Our voluntary **source reduction** goal for Chemical # ____ is to reduce the amount of this chemical generated in hazardous waste from a baseline of _____ (X lbs generated/year) in _____ (month/year) to a reduced amount of _____ (X lbs generated/year), by _____ (month/year).

2. To accomplish this goal, we will explore the following **source reduction** options: (Check all that apply)
   - __ Equipment or technology modifications
   - __ Process or procedure modifications
   - __ Reformulation or redesign of products
   - __ Substitution of less toxic raw materials
   - __ Improvements in inventory control
   - __ Improvements in maintenance/housekeeping practices
   - __ Other (explain): _____

AND/OR

3. Our voluntary **recycling** goal for Chemical # 2 is to increase the pounds of this chemical recycled from a baseline amount of 0 pounds (X lbs/year) in May 2003 (month/year) to an increased recycled quantity of 2,100 lbs (X lbs/year) by Dec 2003 (month/year).

4. To accomplish this **recycling** goal, we will: (check all that apply)

   __Use/reuse in a process to make a product
   __Use/reuse as a substitute for a commercial product
   x Process the waste to recover or regenerate a usable product
   x Other (explain): Send used NI-Cad batteries from cordless power tools to recycling facilities.

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WHAT CAN YOU SAVE TODAY? RESOURCE CONSERVATION CHALLENGE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OMB Control Number: 2050-0190
Expiration Date: 4/30/2006

ACHIEVEMENT AWARD APPLICATION

Ready to receive recognition for your efforts? If you have achieved one of the goals identified in your enrollment agreement, you are eligible for an Achievement Award. To receive this award, describe your achievement using the Success Story outline provided in this packet. Your completed Success Story serves as your application for an Achievement Award. If you are not ready to apply for an Achievement Award at this time, but you have made important progress toward your goal(s) and you would like to share information about your progress, you may submit a Success Story to post on the Waste Minimization Web site.

EPA will review your Success Story for completeness, send you an Achievement Award, and post your achievement on our Web site. At your request, we will also notify your local media of your Achievement Award.

Submission Instructions

Please mail completed Success Story to us at:

Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
(5302W),
Washington, DC 20460

For Delivery Service:

Waste Minimization Partnership Coordinator
U.S. Environmental Protection Agency
Waste Minimization Branch, 6th Floor
2800 Crystal Drive
Arlington, VA 22202

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SUCCESS STORY OUTLINE

The Success Story outline provided below offers a framework for making your Success Story clear and understandable to the many readers that visit our Web site. The outline makes recommendations for approximate length. You can make your Success Story as detailed as you wish.

Section 1: Identifying Information

Organization Name: _____

Principal Contact: _____ Title: _____

Address: _____

City:_____ State: _____ Zip: _____

Enrollment date: _____

Phone Number: _____ Fax: _____ E-mail: _____

EPA RCRA ID Number: _____

Section 2: Organization Background (about 100 words)

- How large is your organization/company?
- How long has your organization been in operation?
- What do you produce, and what is the product used for?
- Who are your major customers?
- How do you produce this product?
- How much do you produce in a year?

Section 3: What Partnership Program Goal Did You Set and How Did You Achieve It? (about 250 words)

- What chemical(s) did you choose to work on?
- What source reduction and/or recycling goal(s) did you set for this waste?
- Why did you pick this waste(s) to work on?

Section 4: What Source Reduction and/or Recycling Alternatives Did You Explore? (about 250 words)

Source Reduction:

- Equipment or technology modifications
- Material substitution
- Reformulation or redesign of products

- Equipment changes
- Improvements in inventory control
- Process or procedure modifications
- Substitution of less toxic raw materials
- Improvements in maintenance/ housekeeping practices
- Other (please explain)

Recycling:

- Explore direct use/reuse in a process to make a product
- Process the waste to recover or regenerate a usable product
- Use/reuse as a substitute for a commercial product
- Other (please explain)

What method did you finally use to achieve your goal?

Section 5: What Hurdles Did You Face? (about 150 words)

- Material substitution issues
- Product quality issues
- Process change issues
- Equipment issues
- Financial issues
- Customer issues
- Senior management commitment and support issues
- Training and/or departmental coordination issues
- What prior successes helped you achieve this goal?

Section 6: Waste Minimization Results (about 250 words)

- Describe and quantify any changes in waste generation achieved using source reduction and/or recycling methods.
- Describe cost savings and/or increases, including changes in capital, production, O&M, raw material purchases, waste management, and worker health and safety costs.
- What was the payback period for this project?
- Describe any changes in company policy, management and/or worker involvement in waste minimization achievements, and/or customer satisfaction that resulted directly or indirectly from this achievement.

Section 7: Lessons Learned: (about 100 words)

- What lessons learned from this project would you like to share with others?

EXAMPLE SUCCESS STORY: ACME MICROGLASS COMPANY

The Acme MicroGlass Company (AMG) was founded in 1991, in Wayright, Pennsylvania. AMG grew from 20 employees in 1991 to 500 employees in 2003. AMG manufactures specialized production monitoring equipment that can be used in a variety of commercial and manufacturing processes to evaluate efficiency and error rates. MicroGlass units are manufactured using a proprietary process that incorporates electronic computer chip production technologies with state-of-the-art cathrode ray tube and software management technologies. AMG's major customers include medical equipment manufacturers, aeronautics engineering companies and computer manufacturers. AMG reported revenues of more than $440 million in 2002.

AMG's Partnership Program Goal: To maintain market share in a highly competitive electronics industry, AMG management directed its engineering and production departments to explore cost reduction options. One of the cost areas explored was waste management. In 2001, AMG generated 200 tons of spent solvent and metal bearing hazardous wastes that cost $800,000 to manage and dispose of properly. One of the metals in the waste was lead, which is widely known to be a public health concerns because of its toxicity to humans if ingested or inhaled. Prior to enrolling in EPA's National Waste Minimization Partnership Program, AMG identified a goal of reducing lead in production by 50 percent, as a means of cutting production costs, and began working on technical alternatives in 2001. AMG enrolled in EPA's National Waste Minimization Partnership Program in June 2002.

Alternatives Considered: AMG used a "lean manufacturing" approach, known as Kaizen, to structure a plan for improving production efficiency and environmental performance. AMG considered a variety of raw material substitutes that would either reduce or eliminate lead in its production processes. AMG had to ensure that product performance remained extremely high considering the specialized applications its customers depend on. After exploring many alternatives, AMG finally adopted ceramic and beryllium-based substitutes for two of its three lead uses in production. AMG also installed dual electrostatic precipitators on its remaining process that used lead in the application, and increased recovery of lead by 75 percent. AMG installed several O&M improvements, including recovery sumps in floor drains and improved efficiency product rinsing techniques that reduced the generation of non-lead wastes. AMG had used a similar team approach to reduce error rates in 1995 and to reduce production down time in 1999.

Hurdles Faced: Coordinating efforts between departments was difficult at first because some managers were wary of potential risks of changing product quality—one of the main concerns of the company. Others were concerned about making production changes that would create downtime and interfere with production quotas and delivery dates. As the alternatives were developed and tested, manager's and workers' concerns were addressed. Downtime was minimized and product quality was demonstrated to be equal to or better than existing quality.

Waste Minimization Results: AMG reduced its lead usage by about 1,800 pounds per year. Waste generation decreased by 50 percent in the first year. The research and capital costs to make this change totaled more than $1.5 million over a year and a half time frame. In addition, purchasing specialized raw materials increased raw material purchase costs by 8 percent. At the same time, waste management costs, worker health and safety training costs, and O&M costs decreased by $250,000 in the first year. Net savings in the first year of operation was $200,000 yielding a payback period of 7.5 years. While the payback period is less than optimal, AMG management considers this investment a worthwhile one because it provides AMG a technological advantage that the company can build on, the process identified other production opportunities that could yield additional savings, and because AMG's membership in EPA's National Waste Minimization Partnership Program provides advantageous public recognition with its customers.

Lessons Learned: Developing a coordinated plan that has top management support is crucial to achieving a desired outcome. Talking to line workers as well as managers provides important information about how to make transitions smoother.